LESSON PLAN

PART I
COVER SHEET

LESSON TITLE: Basic Principles and Assumptions of Camouflage, Concealment, and
Deception (CCD)

TRAINING METHOD: Lecture

REFERENCES: JCCD Technical Report 94-1, Air Base Camouflage, Concealment, and
Deception Guide, January 1994
AFI 32-4007, Camouflage, Concealment, and Deception Program

AIDS AND   Attachment 1: Concept of Hiding with Vegetation
HANDOUTS: Attachment 2: Installation Patterning
Attachment 3: Use of Disguise to Change the Shape of Large Buildings
Attachment 4: Disguise of a large area, and of a Boeing Factory during WWII
Attachment 5: Pilots Reference Points
Attachment 6: Multispectral F-15 Fighter and R-9 Refueler Truck Decoys

LESSON OBJECTIVE: Given a lecture on the Basic Principles and Assumptions of CCD, the
student must correctly answer questions that demonstrate mastery of the samples of behavior listed
below:

SAMPLES OF BEHAVIOR:

1. State the four basic assumptions when addressing the CCD issue.

2. Identify pertinent CCD terms.

3. Give three ways to utilize the CCD method "Hide".

4. Define the method of "Blend".

5. Give one example of the use of the method of "Disguise".

6. List the three types of "Decoys" and give examples.

ORGANIZATIONAL PATTERN: Topical

SUGGESTED COURSE(S) OF INSTRUCTION: Disaster Preparedness Representative
Disaster Preparedness Support Team

STRATEGY: This is the only lesson on CCD principles and assumptions; therefore, it is imperative that each assumption be understood as it forms the foundation of the methods of CCD. The methods stress the basic building blocks used in CCD. Errors associated with the principles should be addressed and clarified.

LESSON OUTLINE:

MAIN POINT 1. **CCD PROGRAM**
        a. ASSUMPTIONS
        b. UNIVERSAL APPLICATION

MAIN POINT 2. **CCD METHODS**
        a. HIDE
        b. BLEND
        c. DISGUISE
        d. DECOY

PART II
TEACHING PLAN

INTRODUCTION

ATTENTION: You are assigned the task to provide your commander with an effective CCD plan for your unit. Where do you start? What will you use as a basis for your plan?

MOTIVATION: This is one time when you don't have to fear the unknown. This lesson will help build your foundation of CCD knowledge and allow you to write a CCD plan.

OVERVIEW: This is the only unit dealing with the basic principles and assumptions when addressing CCD issues. We will also discuss the four methods of CCD used as the building blocks for your foundation of knowledge.

TRANSITION: Let's look at the scope of the issues.

BODY

**MAIN POINT 1:
CCD PROGRAM**

While the *four methods* provide the building blocks which *support* the CCD program, there are *four assumptions* that form the *foundation* on which to build our CCD program.

a. ASSUMPTIONS

Let's look at each assumption in detail:

- Real time knowledge from **Open Sources**
- Cannot deny **aerial acquisition** only delay
- **Slow down** enemy's attack
- **Disorientation** will increase the enemy's Circular Error of Probability (CEP)

1) OPEN SOURCES

The enemy has near real-time knowledge of our air base from open sources. It may seem like we are giving the enemy a lot of credit, but really it is only basic espionage.

a) PHONE DIRECTORIES

When your base telephone directory is missing, do you simply assume it must be the new person that took it or a hostile agent? Do you know for sure?

b) DORM RESIDENCE

Dormitory rooms usually have names, units of assignment, and duty titles on the room doors. Does your base practice removing these during base exercises?

c) BASE MAPS	How about when you drive up to the main gate of a base and ask for directions? They usually give you a map of the base. Very easy. Now the visitor knows where all of the key facilities are located, as well as, your adversaries.
d) GROUND PHOTOGRAPHY	Photographs from the ground are obviously easy to obtain with the number of local nationals visiting overseas bases. The numbers that visit under legitimate guises, such as friendship festivals or open houses are staggering. We're not just talking about overseas, but also in the CONUS.
e) AERIAL PHOTOGRAPHY	While aerial photos of some bases might be difficult, especially where commercial aviation is prohibited, how many of our pilots take airborne photos and then have them developed downtown? It turns out not to be as difficult as it would seem.
2) AERIAL ACQUISITION	Our second assumption is that we cannot totally deny aerial acquisition of our air bases to the enemy, we can only delay and disorient them.
a) WELL KNOWN LOCATIONS	While the locations of our air bases are well known and are large targets, navigation from the air is not as easy as it may appear.
b) VISIBILITY	In many areas, the average inflight visibility at 1000 feet above ground level is only 7 nautical miles.

c) HIGH SPEEDS	In conjunction with all of the weapons systems trying to shoot an enemy pilot down, traveling at speeds up to 900 feet per second will further throw him off course. Therefore, their speed makes them increasingly susceptible to disorientation by our CCD measures.
3) SLOW DOWN ENEMY ATTACK	The third assumption is that we will slow down the enemy's attack and increase his exposure to friendly Integrated Air Defenses (IADs). If we can delay target acquisition long enough, he may break off the attack, leave the base proper and try to re-enter his attack pattern.
a) UNEXPECTED ENTRY	Therefore, base defense anti-aircraft artillery and surface-to-air missiles will have increased opportunities to destroy the attackers. By slowing the attacker's acquisition of his target, he may fly into areas he does not want to be, thus enter an area with overlapping fields of fire.
b) PILOT'S MENTAL STATE	This is very disconcerting to the pilot's mental state and gives the IADs a second shot at the attacker. The entire defense system is also alerted and ready to shoot.
c) YOUR IAD	If you don't already know what systems make up your IADs, you may want to find out. You should know where the units are located, the kind of weapons they have, and the capabilities of those weapons.

d) HOST NATION IAD	These IADs include both US military and host nation weapon systems. This can vary from next to nothing, to the best we have to offer.
4) DISORIENTATION	Our fourth assumption is that the disorientation produced by our CCD efforts will decrease the enemy's bombing accuracy, known as Circular Error of Probability (CEP).
a) INCREASE CEP	Numerous studies have shown that an increased CEP will reduce casualties and battle damage.
b) FORCES ENEMY 'S HAND	Additionally, an increase in the CEP may force the enemy to produce more sorties to accomplish the same results.
b. UNIVERSAL APPLICATION	While each one of these four assumptions may not be valid at every base, each has a degree of universal applicability.
MAIN POINT 2: CCD METHODS	The methods of CCD are the building blocks we use to erect the CCD program. There are many pitfalls and errors associated with these principles and care must be exercised in their use and execution. The methods are:

- Hide
- Blend
- Disguise
- Decoy

a. HIDE

Hide is one of the easiest methods to understand. The concept of "what you can't see, you can't hit" generally sums up this principle.

1) NATURAL HIDING

There are natural hiding elements. Trees and other forms of vegetation can be planted to create a barrier to the attacker's visual, radar, or electro-optical observation.

INSTRUCTORS NOTE: Use Atch 1, of Part IV, as an example of hiding with vegetation.

a) PENETRATING VEGETATION FROM THE AIR

While radar can penetrate vegetation, the pilots will receive a blurry or weakened image on their radar scopes. The resulting image on the pilot's radar scope may be too weak to recognize as a structure or target.

b) VEGETATION

Because trees are so beautiful, forestation/vegetation projects may not only act as a shield, but also improve the quality of life on a base.

c) LANDSCAPING

Various types of plants can be used to hide potential targets, while also providing an attractive landscape and increased security. (This area is covered in greater detail in RTP K7, Forestation and Vegetation.)

d) NATURAL TERRAIN

Terrain features are another natural element that fall under the hide principle.

e) MOUNTAIN RIDGE	A mountain ridge behind your base creates a natural wall between you and the attacker.
f) RIDGE LINES	Fighter aircraft flying at low altitude would not want to attack over a ridge line as it would increase target acquisition difficulty.
g) NATURAL OBSTACLES	Natural obstacles can force an enemy into flying in attack corridors. These are natural paths through mountains and around known IADs.
h) IADs	Permanently installed IADs can act as obstacles because hostile aircraft will not want to overfly them.
2) CAMOUFLAGE NETTING	Camouflage nets are an effective method of hiding potential targets. There are three varieties - the standard DoD net, the lightweight camouflage net (LICAN), and the ultra-lightweight camouflage nets (ULCAN). Each variety has a selection of patterns and uses.
a) STANDARD NETS	Standard nets come in three patterns and can be radar transparent or radar scattering. (RTP K4 has more details on camouflage screening.)
b) ULCANS	The ULCANS are much more lightweight and easier to use. They come in three reversible patterns: woodland/desert, snow/partial snow, and asphalt/concrete.

c) USE THEM CORRECTLY	Use nets correctly. Woodland nets are meant to be used in areas with a lot of vegetation. If used incorrectly, the netting actually highlights the target. The nets must blend into the surrounding vegetation.
3) SMOKE	The third method of hiding is with smoke; however, its use is a dual-edged sword.
a) CLOAKING	While providing an extremely effective cloak to hide under, it can also degrade our operational capabilities if not used correctly.
b) BENEFITS OF SMOKE	The US Army has a great smoke capability. Only recently the Air Force has realized smoke's tremendous benefit and has funded projects to improve our capabilities.
b. BLEND	Blend is probably the most misunderstood of the principles. Under the concept of blend, we try to make an object blend into it's environment or disappear into a "sea of sameness."
1) MERGE OBJECTS WITH THEIR BACKGROUND	Under the concept of blend we try to make objects merge together with their backgrounds and disappear.

a) INHERENT CONTRAST	To accomplish this, a number of factors must be considered. The first is inherent contrast. Numerous studies have shown that the limiting factors for detecting targets with the human eye are: (1) target against background contrast and (2) the atmospheres ability to reduce contrast through normal interference.
b) MINIMAL CONTRAST	This means if there is minimal contrast between the target and its environment that it will be difficult to see no matter what other factors are involved.

> **INSTRUCTORS NOTE:** Read chapter 7 of Tech Report JCCD 94-1 to understand patterning. Then briefly explain patterning and show Atch 2 as an example of entire base patterning.

2) SHAPE DISRUPTION	Another part of the equation is shape disruption. Mother Nature doesn't create anything with straight lines. Therefore, the detection of straight lines indicates human influence.
a) PLANTING AND PAINTING TECHNIQUES	To break up the regular shapes of our buildings we can plant trees and paint building numbers vertically along the corner of the building. This disrupts the shape very easily.
b) CAMOUFLAGE SCREENING	If camouflage screening is added in, it too can be used to effectively break up the straight lines created in man-made structures.

c. DISGUISE

Disguise is one of the most complex principles and is also the hardest to implement on an air base.

> **INSTRUCTORS NOTE:** Use attachment 3 as an example of disguise of a large building.

1) OBJECT

The object of disguise is to make a target look like a non-target. The problem is in defining what is a non-target on an air base. For us though, simpler is better. If you have a key facility flanked by two non-essential buildings, you may have the capability to use disguise.

a) DISGUISE KEY FACILITIES

First, hide one of the non-essential buildings any way you can. Use screening, trees, or your imagination. Then disguise the critical building to look like the one you just hid.

b) HIDE NON-ESSENTIAL BUILDINGS

Next, make the second non-essential building look like the actual critical facility. Last, build a cheap decoy building on the end of the row.

c) SEA OF SAMENESS

Usually, when disguising a facility, you will need to create a decoy to replace it. If not, you will have to hope the disguise will be lost in the "sea of sameness." The disguise principle goes well with the decoy principle.

2) PRACTICAL EXAMPLE

During WW II, entire aircraft factories were disguised as extensions of suburban areas around the factories. A giant tarp covered the entire factory and streets and grass were painted on it. Balsa wood homes and trees were erected. Factory steam and smoke were vented out through the false chimneys. The illusion of streets continued out across the runways with different colors of paint. The overall effect was stunning.

d. DECOY

Disguise is intimately interwoven with the principle of decoy which is the fourth principle of CCD. Decoys come in three main types:

- Decoy cues
- Target decoys
- Distracters

INSTRUCTORS NOTE: Use Atch 5 as an example to show cues an attacker may use to reach their target.

1) DECOY CUES

A decoy cue is a false imitation of an actual orientation cue the pilot uses to find a target. This includes rivers, bridges, road crossings, towers, masts, taxiways, or any terrain features which stand out from their surroundings.

a) WHAT AN ATTACKER LOOKS FOR	Attacking pilots approach their targets looking for the largest target possible and work their way through smaller targets until they find the one they are looking for. For example, an attacking pilot may locate a smokestack 5 km from your base. Looking to the north he spots a road intersection and looks immediately to his right and sights a large radar tower. Just beyond that is a mountain pass, through which lies the airbase with the POL yard just inside the fence, which is his target.
b) OUR GOAL	While eliminating all target cues is impossible, our job is to confuse, delay, and disorient the enemy. Another example is if your base had only one slanting taxiway and it pointed directly at the maintenance control building. You would create a second slanting taxiway using False Operating Strips (FOS).
c) THE BASE TDO	The base Tactical Deception Officer (TDO) should know about where most likely enemy approaches are. Use this information to decide where to place decoy cues.
d) USE AERIAL SURVEYS	Conduct ground and aerial surveys to identify any likely visual aim points. Duplicate them on projected flight paths to create false cues.

> **INSTRUCTORS NOTE:** Use attachment 6 to demonstrate what multispectral decoys look like. Real photographs would enhance the presentation, if available. These show support equipment for the aircraft i.e. R-9 refueler.

2) TARGET DECOYS

Target decoys are unlimited. What do maintenance units plan to do with unusable battle damaged aircraft, vehicles, and the aircraft used for battle damage repair training? Here are a couple of examples.

a) EXAMPLE

A quick coat of paint and some new tires will make a burned out vehicle look like new from the air. The Defense Reutilization and Marketing Office gives these away at no cost.

b) EXAMPLE

Remember, when you put out an aircraft decoy, put out decoy vehicles, starter carts, and cylinders to make them look more realistic.

3) DISTRACTERS

Under the category of distracters are some interesting ideas.

a) DAMAGED FACILITIES

Damaged, useless buildings can be made to appear serviceable and good buildings made to appear blown up. For example, during WW II, the Germans painted bomb craters on the runway they had fixed. This worked great until photos of the airfields were examined with a stereoscope to reveal that the craters had no depth.

2-14

b) SAM
   SIMULATORS

Another distracter is Surface-to-Air Missile (SAM) simulators used to mimic actual Stinger missiles. The concept of operations is classified.

c) SIGNS ARE
   INEFFECTIVE

Many bases use decoy signs in an attempt to trick the enemy. This practice is unproductive and is usually ineffective. Most enemy ground troops either don't read English or will simply follow their maps and training and disregard the misinformation we use in decoy signs. Where decoy signs have been used, the signs fooled only personnel recently deployed to the base.

CONCLUSION

SUMMARY:

During this lesson we have covered:

1. The scope of CCD issues.
2. The four assumptions we make when addressing CCD.
3. The principles of hide, blend, disguise, and decoy.

REMOTIVATION:

Although this can be a difficult subject to master, you now have the foundation and the building blocks on which to base your CCD program.

CLOSURE:

This concludes this lesson on the basic principle and assumptions of CCD.

TRANSITION:

(Develop locally to transition to the next topic.)

PART III
EVALUATION

STUDENT PERFORMANCE STANDARDS

TEST ITEMS

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1. LESSON OBJECTIVE: State the four basic assumptions when addressing the CCD issue.

QUESTION: (Multiple Choice)

Which of the following is NOT a basic assumption we must make when addressing the CCD problem?

a. The enemy has near real-time knowledge of our air bases from open sources.
b. We cannot totally deny aerial acquisition of our bases to the enemy, we can only delay and disorient them.
c. We will speed up the enemy's attack, thereby decreasing his exposure to friendly integrated air defenses (IADs).
d. The disorientation produced by our CCD measures will increase the attacker's Circular Error of Probability (CEP).

KEY: c. We will speed up the enemy's attack, thereby decreasing his exposure to friendly integrated air defenses (IAD's).

REFERENCE: Main Point 1.

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2. LESSON OBJECTIVE: Identify pertinent CCD terms.

QUESTION: (Multiple Choice) The object of disguise is to_____.

a. use smoke to "cloak" the potential target.
b. make an object disappear into a "sea of sameness."
c. implement the concept of "what you can't see you can't hit."
d. make a target look like a non-target.

KEY: d. make a target look like a non-target.

REFERENCE: Main Point 2.

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3. LESSON OBJECTIVE: Give three methods to accomplish the principle of hide.

QUESTION: (Multiple Choice)

Which of the following is NOT used to accomplish the principle of hide?

a. Natural elements.
b. Attack corridors.
c. Camouflage nets or screens.
d. Smoke.

KEY: b. Attack corridors.

REFERENCE: Main Point 2.

4. LESSON OBJECTIVE: Define the principle of blend.

QUESTION: (Multiple Choice)

Under the concept of blend, we try to _____

a. increase contrast between objects and their environment.
b. decrease light reflectance of the object we are trying to hide.
c. make objects merge together with their backgrounds and disappear into a "sea of sameness".
d. use colors other than reds, blues, and grays.

KEY: c. make objects merge together with their backgrounds and disappear into a "sea of sameness".

REFERENCE: Main Point 2.

5. LESSON OBJECTIVE: Give one example of the use of the principle of disguise.

QUESTION: (Multiple Choice)

Which of the following is an example of the use of disguise?

a. Camouflage screening is used to cover a gun emplacement on the base perimeter.
b. Smoke operations are used to cover an air base ground defense maneuver.
c. The base command post is recently painted a flat gray color to match the surrounding
    environment, mostly concrete.
d. During WWII entire aircraft factories were changed in appearance to look like suburban
    housing areas.

KEY: d. During WWII entire aircraft factories were changed in appearance to look like
            suburban housing areas.

REFERENCE: Main Point 2.

6. LESSON OBJECTIVE: List the three types of decoys and give examples.

QUESTION: (Multiple Choice)

Which of the following is NOT a type of decoy?

a. shape disruption.
b. false cues.
c. distracters.
d. simulated targets.

KEY: a. shape disruption.

REFERENCE: Main Point 2.

PART IV
RELATED MATERIALS

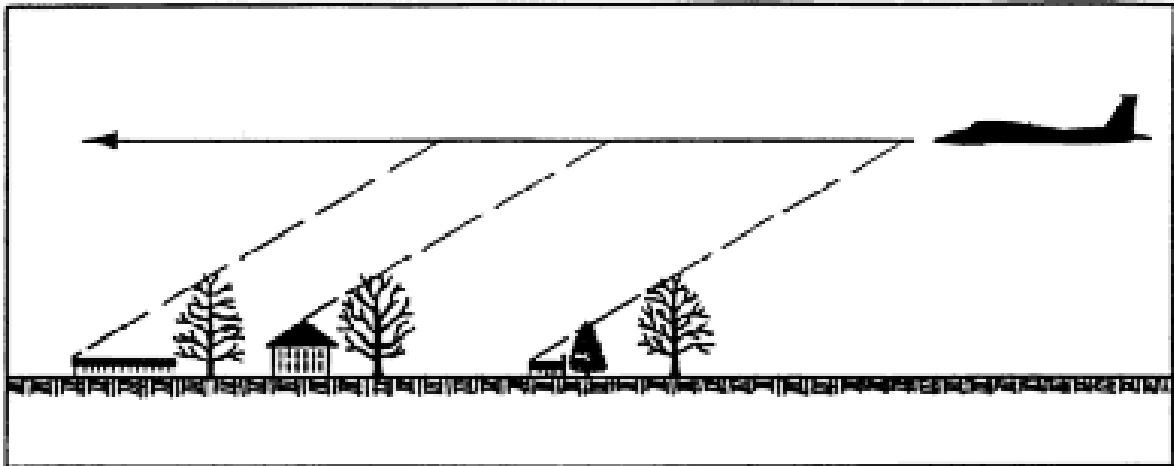**Attachment 1:** Concept of Hiding with Vegetation

Attachment 2: Installation Patterning

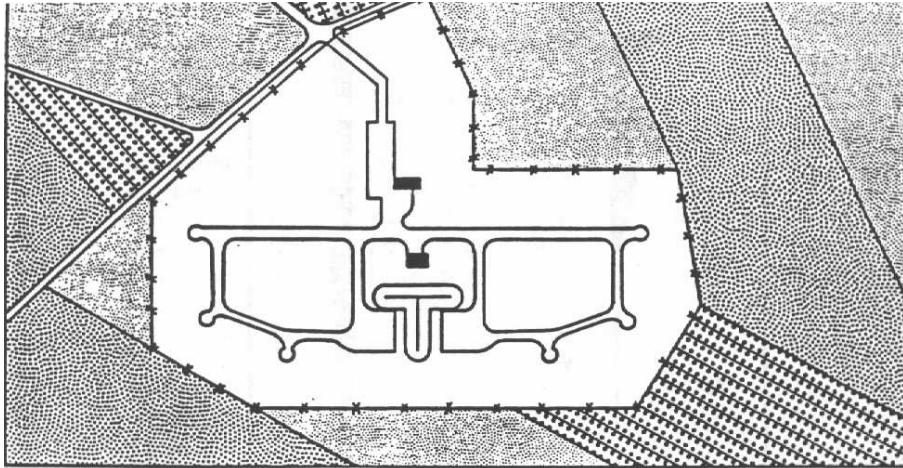**Attachment 3:** Use of Disguise to Change Shape of Large Buildings

Attachment 4: Disguise of a large area, and of a Boeing Factory during WWII
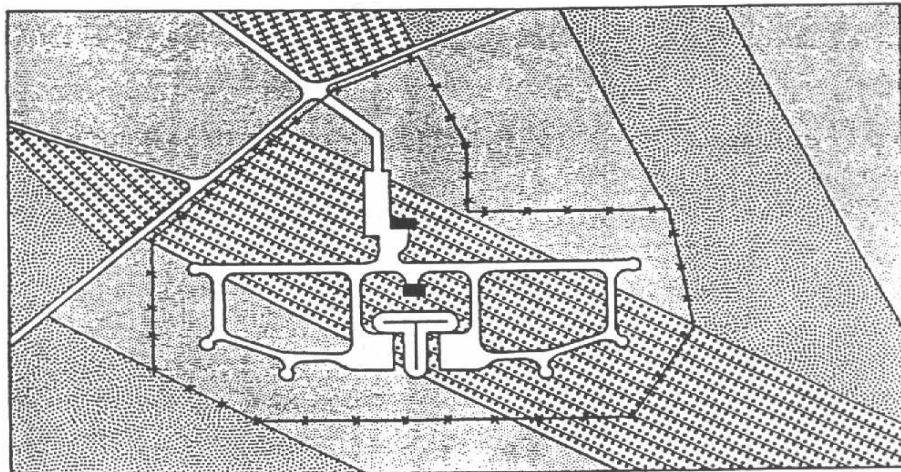
Attachment 5: Pilots Reference Points

Attachment 6: Multispectral F-15 and R-9 Refueler Truck Decoys

ATTACHMENT 1: CONCEPT OF HIDING WITH VEGETATION
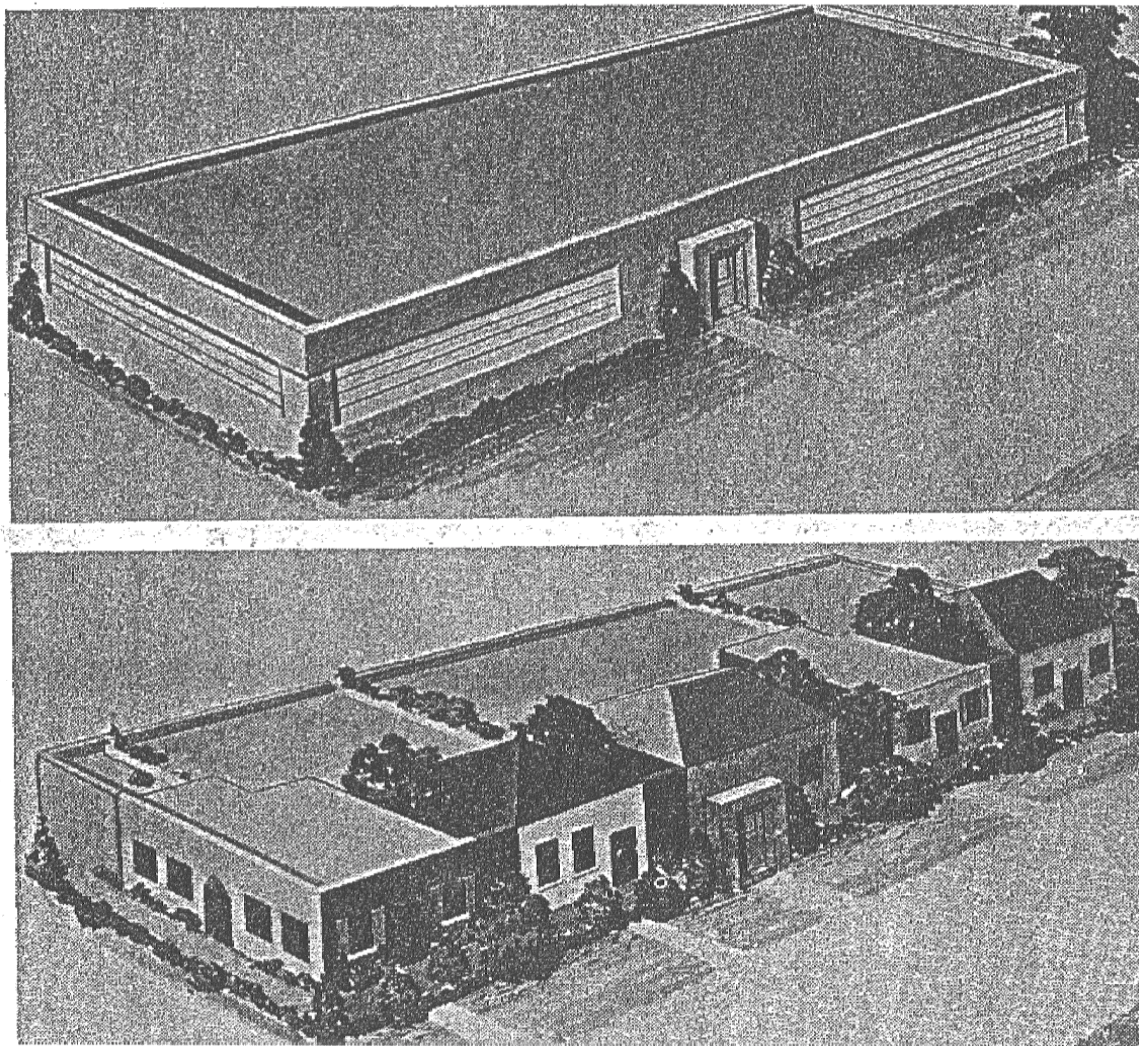
**Installation That Does Not Conform With The
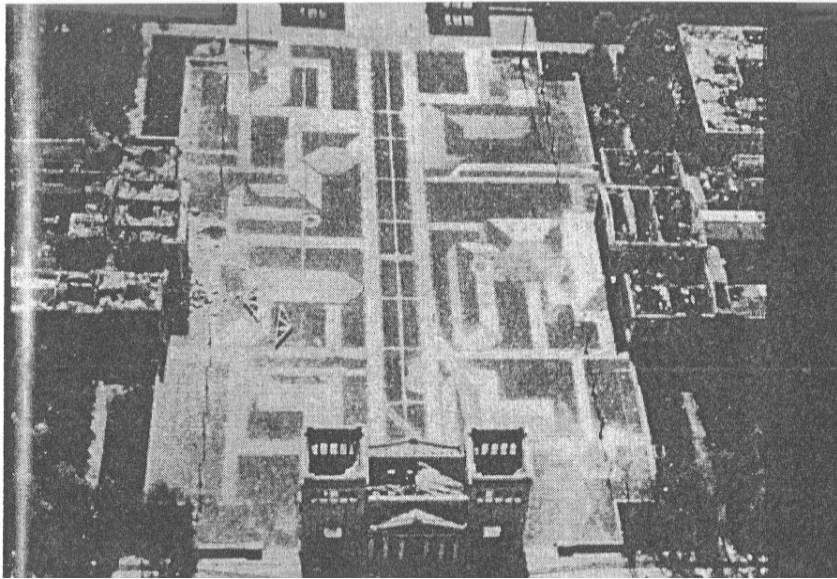Pattern Of The Surrounding Area**

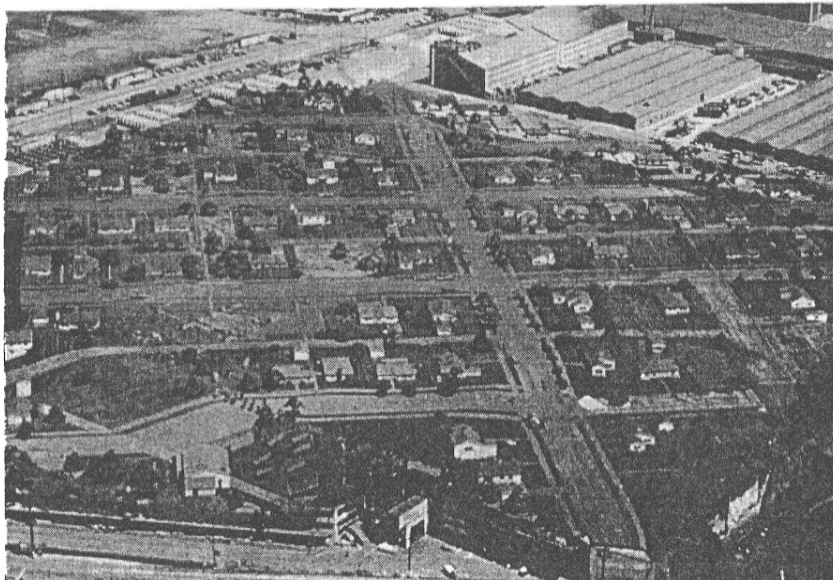

Effective Patterning For The Entire Installation

ATTACHMENT 2: INSTALLATION PATTERNING

ATTACHMENT 3: USE OF DISGUISE TO CHANGE THE SHAPE OF LARGE BUILDINGS

Disguise of a large square as a built up area in Munich during WWII

Boeing factory disguised with a tarp overlay.

ATTACHMENT 4: DISGUISE OF A LARGE AREA, AND OF A BOEING FACTORY
DURING WWII

ATTACHMENT 5: PILOTS REFERENCE POINTS

ATTACHMENT 6: MULTISPECTRAL F-15 AND R-9 REFUELER TRUCK DECOYS

TRAINING PACKAGE COMMENT REPORT

RTP # _____   **RTP DATE:** _____

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Comments:
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